

CLAIMS

1. A screening element (A, B, C, D) which includes a body (12) with an upper screening surface (70), a lower discharge surface (72), a plurality of beam formations (16) each of which extends at least partially across the body, at least a first plurality of apertures (18, 20) in the body defined by the beam formations and an integrally formed reinforcing frame (14) which is at least partially embedded in the body and made of a first plastics material, characterised in a plurality of spacers (140) which are integrally formed on the frame and at least partially embedded in the body.
- 10 2. A screening element according to claim 1 characterised therein that the frame is rectangular in outline and defines at least one rectangular opening (127A, B) with a plurality of inner corners (128A, B, C, D).
3. A screening element according to claim 2 characterised therein that at least one of the inner corners is curved to provide an expansion point.
- 15 4. A screening element according to claim 2 characterised therein that at least one of the inner corners is slotted (130) to provide an expansion point.
5. A screening element according to any one of claims 1 to 4 characterised therein that the frame includes at least one cross member (126).
- 20 6. A screening element according to any one of claims 1 to 5 characterised by a plurality of keying formations (132, 134, 136, 138) on the frame.
7. A screening element according to claim 6 characterised therein that each of the keying formations is in the form of a groove (134), spigot (136) or aperture (138).
- 25 8. A screening element according to any one of claims 1 to 7 characterised therein that in cross-section the frame has a slenderness ratio of between 2:5 and 2:3.
9. A screening element according to claim 8 characterised therein that the slenderness ratio is 2:4.
10. A screening element according to any one of claims 1 to 9 characterised therein that the body is made of a second plastics material.

11. A screening element according to claim 10 characterised therein that the first plastics material has a greater density than the second plastics material.
12. A screening element according to claim 10 or 11 characterised therein that the second plastics material is polyurethane.
- 5 13. A screening element according to any one of claims 1 to 12 characterised therein that the body includes a plurality of location formations (120).
14. A screening element according to any one of claims 1 to 13 characterised in that a tag (152) is located in the body.
- 10 15. A screening element according to claim 14 characterised therein that the tag is in the form of an electronic device.
16. A screening element according to any one of claims 1 to 15 characterised therein that in cross-section at least one beam formation includes a tapered section (74) and a support section (76).
- 15 17. A screening element according to claim 16 characterised therein that the tapered section has an enlarged base (80) facing towards the screening surface and a narrow neck (82) facing towards the discharge surface.
18. A screening element according to claim 17 characterised therein that the support section is attached to the neck of the tapered section.
- 20 19. A screening element according to claim 16, 17 or 18 characterised therein that the support section includes a reinforcing insert (78).
- 20 20. A screening element according to any one of claims 16 to 19 characterised therein that the tapered section and the support section are integrally formed.
- 25 21. A screening element according to any one of claims 16 to 20 characterised therein that the tapered section has a reducing taper from the screening surface towards the discharge surface and the support section is located between the tapered section and the discharge surface.
22. A screening element according to any one of claims 1 to 21 characterised therein that the first plurality of apertures are in communication with one another.
- 30 23. A screening element according to any one of claims 1 to 22 characterised therein that each of the first plurality of apertures is of a first shape.

24. A screening element according to claim 23 characterised therein that a second plurality of apertures (26) are defined between at least two of the beam formations.
25. A screening element according to claim 24 characterised therein that the 5 second plurality of apertures are in communication with one another.
26. A screening element according to claim 24 or 25 characterised therein that each of the second plurality of apertures is of a second shape.
27. A screening element according to claim 26 characterised therein that the first and second shapes are different from one another.
- 10 28. A screening element according to claim 26 or 27 characterised therein that the first and second shapes are selected from a square shape, hexagonal shape or octagonal shape.
29. A screening element according to any one of claims 1 to 22 characterised in that a plurality of first cross members (32) extend from at least one beam formation 15 in a first direction (34) and a plurality of second cross members (36) extend from the one beam formation in a second direction (36) which is opposite to the first direction, each of the second cross members being directly opposite a respective first cross member.
30. A screening element according to claim 29 characterised therein that each of 20 the first and second cross members extends at a right angle from the one beam formation.
31. A screening element according to any one of claims 1 to 22 characterised therein that each beam formation has a screening formation (42) with a first screening section (44) which extends in a first direction (34), a second screening section (46) attached to the first screening section which extends in a second direction (48) which is different from the first direction, a third screening section (50) attached to the second screening section which extends in a third direction (38) which is opposite to the first direction and a fourth screening section (52) attached to the third screening section which extends in the second direction. 25
- 30 32. A screening element according to claim 31 characterised therein that each of the first plurality of apertures (18D) is rectangular in outline.

33. A screening element according to claim 31 characterised therein that each of the first plurality of apertures is square in outline.
34. A screening element according to claim 32 or 33 characterised therein that each of the first plurality of apertures is bordered on three of its four sides by the first, second and third screening sections.
- 5 35. A screening element according to any one of claims 31 to 34 characterised therein that the second direction is at a right angle to the first direction.
36. A screening system which includes a screening element according to claim 14 or 15 and characterised in that it includes a sensor (154) for monitoring the presence 10 or absence of the tag.
37. A screening system according to claim 36 characterised in that it includes an alarm (156) and that the sensor provides an output (155) to the alarm.
38. A method of manufacturing a frame for a screening element according to any one of claims 1 to 37 characterised therein that it includes the step of forming a 15 frame body (14) from a first plastics material.
39. A method of manufacturing a frame for a screening element according to claim 38 characterised therein that the frame body is formed in an injection molding step.
40. A method of manufacturing a frame for a screening element according to 20 claim 38 or 39 characterised therein that it includes the step of forming a plurality of keying formations (132) on the frame body.
41. A method of manufacturing a frame for a screening element according to claim 40 characterised therein that each of the keying formations is in the form of a groove (134), spigot (136) or aperture (138).
- 25 42. A method of manufacturing a frame for a screening element according to any one of claims 38 to 41 characterised therein that it includes the step of integrally forming a plurality of spacers (140) on the frame body.
43. A method of manufacturing a frame for a screening element according to any one of claims 38 to 42 characterised therein that the frame body is rectangular in outline

and defines at least one rectangular aperture (127A, B) with a plurality of inner corners (128A, B, C, D).

44. A method of manufacturing a frame for a screening element according to claim 43 characterised therein that it includes the step of forming a slot (130) in at least 5 one of the inner corners.

45. A process for the manufacturing of a screening element according to any one of claims 1 to 35 characterised therein that it includes the steps of:

- (a) forming a frame (14) from a first plastics material; and
- (b) molding a screen body (12) from a second plastics material at least partially 10 around the frame.

46. A process for the manufacturing of a screening element according to claim 45 characterised therein that the frame is molded in a first injection molding step and the screen body is molded in a second injection molding step.

47. A process for the manufacturing of a screening element according to claim 45 or 15 46 characterised therein that the first plastics material has a greater density than the second plastics material.

48. A process for the manufacturing of a screening element according to claim 45, 46 or 47 characterised therein that the second plastics material is polyurethane.

49. A process for the manufacturing of a screening element according to any one of 20 claims 45 to 48 characterised therein that the frame is placed in a dieset (141) wherein the screen body is injection molded.